

## Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004-2005. For more information, please visit [www.landfire.gov](http://www.landfire.gov). Please direct questions to [helpdesk@landfire.gov](mailto:helpdesk@landfire.gov).

### Potential Natural Vegetation Group (PNVG):

R3OCWO

Madrean Oak Conifer Woodland

### General Information

**Contributors** (additional contributors may be listed under "Model Evolution and Comments")

**Modelers**

Tyson Swetnam

[tswetnam@u.arizona.edu](mailto:tswetnam@u.arizona.edu)

Reese Lolley

[rlolley@fs.fed.us](mailto:rlolley@fs.fed.us)

**Reviewers**

#### Vegetation Type

Woodland

#### Dominant Species\*

JUDE2

QUEM

PILE

MUMO

#### General Model Sources

Literature

Local Data

Expert Estimate

#### LANDFIRE Mapping Zones

14	24	28
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15	25
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23	27
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#### Rapid Assessment Model Zones

California

Pacific Northwest

Great Basin

South Central

Great Lakes

Southeast

Northeast

S. Appalachians

Northern Plains

Southwest

N-Cent.Rockies

#### Geographic Range

Southern Arizona, southern New Mexico, and western Texas.

#### Biophysical Site Description

The oak and conifer woodlands of the interior Southwest is described by Brown (1994) as having open evergreen oaks, alligator bark junipers, and Mexican pines that range from 15 to 50 feet (6-15 meters) in height with an understory dominated by grasses.

Kuchler (1964) includes this type within type number 31, the oak-juniper woodland. For the coarse-scale PNVGs this type was included in type number 26, Chaparral. This PNV type is included in Bailey's (1995) and McNab and Avers (1994) Ecoregions within the Chihuahuan Semi-Desert province, Basin and range section( 321A), and the Arizona-New Mexico Semi-desert Mountains province (M313) within the White Mountain-San Francisco Peaks Section (M313A) and Sacramento-Monzano Mountain Section (M313B).

#### Vegetation Description

The natural vegetation structure was dominated by open late seral woodland on slopes and ridges transitioning to somewhat closed woodland in draws and on rocky slopes, with interspersed patches of early and mid seral structures resulting from stand replacement fire. Shrubs and forbs were low density scattered throughout. Species dominating the natural regime include alligator juniper (*Juniperus deppeana*), emory oak (*Quercus emoryi*), mountain muhly (*Mulenbergia montana*), sideoats gramma (*Bouteloua curtipendula*), and blue gramma (*Bouteloua gracilis*). Climax indicator species include alligator juniper (*Juniperus deppeana*) and one-seed juniper (*Juniperus osteosperma*) at lower elevations; Chihuahuan Pine (*Pinus lieophylla*), Apache Pine (*Pinus engelmannii*), and Pinyon pine (*Pinus* spp.) at higher elevations. Madrean oaks (*Quercus* spp.), Arizona Madrone (*Arbutus arizonica*), and various shrubs may be codominant.

\*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

## Disturbance Description

Regime I (frequent surface- and mixed severity fires) with fire intervals generally ranging from 5-20 years long (approx. 10-yr MFI; Brown and Smith 2000, USDA 2002). Large-diameter alligator junipers and evergreen oaks often survive 1 to 3 low intensity fires resulting in "cat face" scars with char at the base of the tree, whereas Mexican pines can survive multiple low intensity fires. Fire severity can be mixed in both space and time, for example, high-severity fires can occur on relatively productive sites, or during extreme fire weather and prolonged droughts. Alligator juniper and evergreen oaks that are top killed by fire resprout, indicating adaptation to frequent fire, but not to very frequent fire (less than 6 years), which would eliminate these species. Severity of fire is likely mixed in both space and time. In years when fire burned in very dry conditions, with considerable grassy fuel and wind, they would likely burn as surface fires on gentle terrain, but open up patches on steeper terrain and in wide draws where tree canopies tend to be more dense. In other years when fire burned in more moist conditions, without wind, or as backing fires, they likely would burn much of the area as surface fires. Greater than 120 day burning days with primary seasons of May-July and September-October. We estimate a range from 6 to 20 years with a mean fire interval of 10 years (Swetnam and Baisan 1996).

Drought was likely the most common natural disturbance in addition to fire. Fire years generally coincide with moist periods that produced considerable grassy fuel, followed by a dry period. Grazing by large ungulate herds may have caused some disturbance and interacted with fire and drought.

## Adjacency or Identification Concerns

This PNV can be confused with the Great Basin Conifer Woodland type of Brown (1994), the juniper-pinyon or juniper steppe types of the coarse-scale type PNVGs (Schmidt et al. 2002) and Kuchler (1964) PNV. The presence of old, often large diameter, mushroom shaped alligator juniper, evergreen oaks, and long needle pines that are older than post-Euro-American settlement, with scattered old, large diameter logs are good indicators of this type. Site indicator species include alligator juniper, oaks, mountain muhly, blue gramma, and sideoats gramma.

## Scale Description

Sources of Scale Data  Literature  Local Data  Expert Estimate

Typical landscapes in this PNV form a zone between the warmer and dryer Plains Mesa Grassland at lower elevations and the moister Woodland-Grassland Complex on slopes and mesas at higher elevations.

Contiguous landscapes of this PNV can range from as small as a quarter section (160 acres) to as large as a township (36 sections, 23,000 acres).

## Issues/Problems

## Model Evolution and Comments

This model is based on the original FRCC model OCWI was renamed R3OCWO in the Albuquerque workshop.

This model did not receive any peer review.

## Succession Classes

*Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook ([www.frcc.gov](http://www.frcc.gov)).*

**Class A 9%**

Early1 PostRep

**Description**

Post-fire grass and fire-adapted forbs: herbaceous life form with 10-30 % canopy and 20% average; mountain mully, blue gramma, sideoats gramma, asters, penstemons, sprouting shrubs

**Indicator Species\* and Canopy Position**

MUMO  
BOGR2  
BOCU

**Upper Layer Lifeform**

- Herbaceous  
 Shrub  
 Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	10 %	20 %
Height	no data	no data
Tree Size Class	no data	

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class B 10%**

Mid1 Closed

**Description**

Mid-seral woodland, typically in more productive draws and northerly aspects: woodland life form with 15-70% canopy, average of 55%; alligator juniper, oaks, mahogany, mountain mully, blue gramma

**Indicator Species\* and Canopy Position**

JUDE2  
QUEM  
MUMO  
PILE

**Upper Layer Lifeform**

- Herbaceous  
 Shrub  
 Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	15 %	70 %
Height	no data	no data
Tree Size Class	no data	

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class C 10%**

Mid1 Open

**Description**

Mid-seral grasslands on southerly slopes & ridges: grass dominated herbaceous life form with species such as mountain mully, blue gramma, and sideoats gramma; 25-65% herbaceous cover; 5-15% canopy of scattered trees and shrubs, such as alligator juniper, oaks;

**Indicator Species\* and Canopy Position**

MUMO  
JUDE2  
QUEM  
PILE

**Upper Layer Lifeform**

- Herbaceous  
 Shrub  
 Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	5 %	15 %
Height	no data	no data
Tree Size Class	no data	

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class D 70%**

Late1 Open

**Description**

Late-seral open woodland on slopes & ridges: woodland life form with 5-35% canopy, 25% average; alligator juniper, oaks, mountain muly, blue gramma, sidecoats gramma;

**Indicator Species\* and Canopy Position**

MUMO  
JUDE2  
QUEM  
PILE

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	5 %	35 %
Height	no data	no data
Tree Size Class	no data	

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class E 1%**

Late1 Closed

**Description**

Late-seral closed woodland typically in draws or on steep rocky or thin soil slopes & ridges: woodland life form with 35-70% canopy, average of 55%;alligator juniper, oaks, mahogany, scattered shrubs and grasses

**Indicator Species\* and Canopy Position**

JUDE2  
QUEM  
PILE  
MUMO

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	35 %	70 %
Height	no data	no data
Tree Size Class	no data	

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Disturbances**

**Non-Fire Disturbances Modeled**

- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- Other:

**Fire Regime Group: 1**

- I: 0-35 year frequency, low and mixed severity
- II: 0-35 year frequency, replacement severity
- III: 35-200 year frequency, low and mixed severity
- IV: 35-200 year frequency, replacement severity
- V: 200+ year frequency, replacement severity

**Fire Intervals (FI):**

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

**Historical Fire Size (acres)**

Avg:  
Min:  
Max:

**Sources of Fire Regime Data**

- Literature
- Local Data
- Expert Estimate

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	65			0.01538	16
Mixed	140			0.00714	8
Surface	14	1	20	0.07143	76
All Fires	11			0.09396	

\*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

## **References**

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